

WHAT IS CLAIMED IS:

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1. An apparatus for receiving data comprising:
an edge processor operative to make decisions using a plurality of edges of a
5 received data stream; and
a communication circuit coupled to the edge processor, said communication
circuit operative to convert communications with the edge processor from a first format
to a second format.
- 10 2. The apparatus according to claim 1, wherein said first format include uni-
directional signaling.
3. The apparatus according to claim 1, wherein the second format includes
simultaneous bi-directional signaling.
- 15 4. The apparatus according to claim 3, wherein the first format includes uni-
directional signaling.
5. The apparatus according to claim 1, wherein the second format include
20 differential simultaneous bi-directional signaling.
6. The apparatus according to claim 1, wherein said communication circuit
comprises a plurality of current sources, said current sources coupled to form
differential pairs, said differential pairs operative to convert a differential voltage to a
25 differential current, each of said differential pairs operatively coupled to a resistor.
7. The apparatus according to claim 6, wherein said differential voltage is less
than a safe operating voltage of the receiver.

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8. An apparatus for converting signaling between a transmitter and an edge-based receiver from unidirectional signaling to differential simultaneous bi-directional signaling comprising:

5 a plurality of current sources, said current sources coupled to the edge-based receiver to form differential pairs, said differential pairs operative to convert a plurality of differential voltages to a plurality of differential currents; and

a plurality of resistors coupled to each of the differential pairs to sum said differential currents to yield a single differential load.

10 9. The apparatus according to claim 8, wherein said plurality of differential voltages comprise a plurality of differential voltages from a transmitter and a plurality of differential voltages from a receiver, respectively.

15 10. The apparatus according to claim 6, wherein said differential voltages are less than the safe operating voltage of said receiver.

11. A system for performing signaling between a transmitter and an edge based receiver comprising:

20 a transmitter including a current mode driver, a high impedance output and a dual end termination;

an edge based receiver including an edge processor operative to make decisions using a plurality of edges of a received data stream; and

25 a conversion circuit disposed between the edge based receiver and the transmitter, said conversion circuit operative to convert signaling between the transmitter and the receiver from a first format to a second format.

12. The system according to claim 11, wherein said first format includes unidirectional signaling.

13. The system according to claim 11, wherein said second format includes simultaneous bi-directional signaling.

14. The system according to claim 11, wherein said second format includes
5 differential simultaneous bi-directional signaling.

15. The system according to claim 14, wherein said first format includes unidirectional signaling.

10 16. The system according to claim 15, wherein said conversion circuit operates as a voltage/current subtraction circuit.

17. The system according to claim 15, wherein said conversion circuit further comprises:

15 a plurality of current sources, said current sources coupled at said edge-based receiver to form differential pairs, said differential pairs operative to convert a plurality of differential voltages to a plurality of differential currents;

a plurality of resistors coupled to each of the differential pairs, said plurality of resistors to sum said differential currents to yield a single differential load.

20 18. The system according to claim 15, wherein said conversion circuit further comprises:

a plurality of current sources coupled to the edge-based receiver to form a plurality of differential pairs, said plurality of differential pairs operative to convert a
25 plurality of differential voltages to a plurality of differential currents; and

a plurality of resistors coupled to each of the plurality of differential pairs to sum said plurality of differential currents to yield a single differential load.

30 19. A method for converting a signaling format between a transmitter and an edge-based receiver comprising:

creating a plurality of differential pairs;
converting a plurality of differential voltages in said plurality of differential
pairs to a plurality of differential currents;
coupling the plurality of differential currents to an edge-based receiver; and
5 summing the plurality of differential currents to yield a single differential load.

20. The method according to claim 19, wherein the plurality of differential
voltages comprise a plurality of differential voltages from a transmitter and a plurality
of differential voltages from an edge-based receiver, respectively.

21. The method according to claim 20, wherein the edge-based receiver
comprises an edge processor operative to make decisions using a plurality of edges of a
received data stream.

22. A computer readable media having encoded thereon instructions causing a
processor to convert a signaling format between a transmitter and an edge-based
receiver by:

creating a plurality of differential pairs;
converting a plurality of differential voltages in said plurality of differential
20 pairs to a plurality of differential currents;
coupling the plurality of differential currents to an edge-based receiver; and
summing the plurality of differential currents to yield a single differential load.

23. The computer readable media according to claim 22, wherein the plurality
25 of differential voltages comprise a plurality of differential voltages from a transmitter
and a plurality of differential voltages from an edge-based receiver, respectively.

24. The computer readable media according to claim 23, wherein the edge-
based receiver comprises an edge processor operative to make decisions using a
30 plurality of edges of a received data stream.